

ABSTRACT OF THE DISCLOSURE

An image signal is read out by use of a stimuable phosphor sheet having a layer of stimuable phosphor which emits stimulated emission in proportion to the stored energy of radiation upon exposure to stimulating light and a solid image sensor having a photoconductive material layer which exhibits electric conductivity upon exposure to the stimulated emission from the stimuable phosphor sheet. Stimulating light is caused to scan a stimuable phosphor sheet which has been exposed to radiation and has stored an image, the photoconductive material layer is caused to be exposed to stimulated emission emitted from the stimuable phosphor sheet upon exposure to the stimulating light. Then electric charges generated in the photoconductive material layer upon exposure to the stimulated emission is detected by applying an electric field to the photoconductive material layer. The stimuable phosphor sheet has a layer of stimuable phosphor which is stimulated by stimulating light in a wavelength range of not shorter than 600nm and emits stimulated emission in a wavelength range of not longer than 500nm. The solid image sensor has a photoconductive material layer whose major component is a-Se, and the electric field is such as to generate an avalanche amplification effect in the photoconductive material layer.